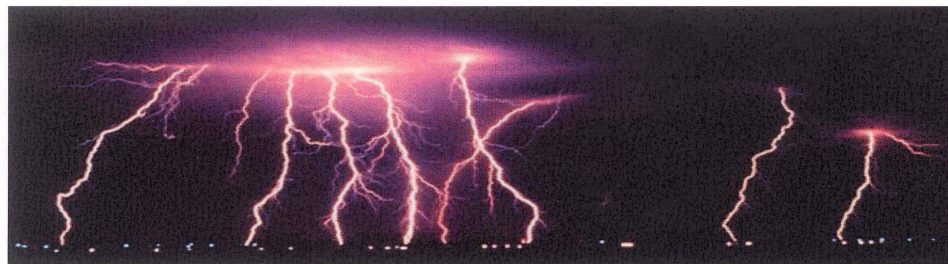
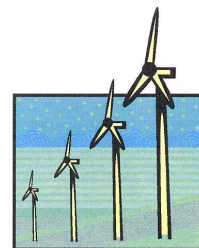


Electricity

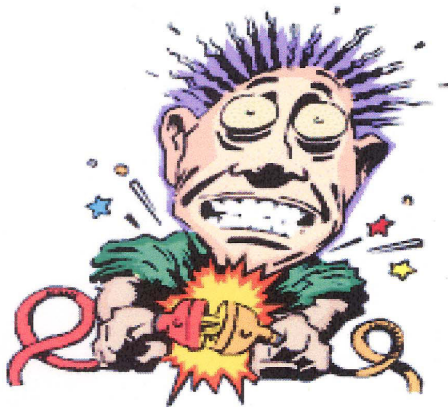


**It's shocking, how much
Joule want to know!**



*An Integrated/Interdisciplinary Thematic
Study of Electricity for the Fifth Grade*

Written by:
Deanna Pemberton,
Kathy Anderson,
Meghan Wilson



Jamie Hamnes,
Polly Lussier,
Amy Dahedl,
Chad Wulff

Red Lake Elementary School, Red Lake, MN

OVERVIEW

I. **CONTENT:**

This unit will teach the complete idea of electricity to fifth grade students. They will learn about how it is created, used, components of it, and how we can use it wisely and conserve our natural resources.

II. **PROCESS:**

Thinking skills are developed by the students through reading, writing, creating, diagramming, building models, singing, dancing, visiting places on field trips, and learning through guest speakers.

III. **PRODUCT:**

As a result of this unit the students will know the main components of electricity and how it is used in their own environment.

Unit Overview: Alignment with National / State / District Pupil Performance Standards

Overarching Benchmarks / Goals for complete unit of study: *Benchmarks are currently being revised by the Minnesota Department Of Education*

I-SEARCH INDEPENDENT RESEARCH PROJECTS FOR GIFTED AND TALENTED STUDENTS
--

1. **PARADOXES:**

It's common belief that Ben Franklin discovered electricity. Write about when electricity was really discovered.

2. **ATTRIBUTES:**

Lightening kills many people a year. Design a poster that shows how to be safe in electrical storms.

3. **ANALOGIES:**

The brain and the light bulb are alike. Create a bulletin board comparing the nervous system to an electrical circuit.

4. **DISCREPANCIES:**

The future of electricity is unknown. Create a skit on what you think the future with electricity might be like.

5. **PROVOCATIVE QUESTIONS:**

In the movie A.I. the boy discovers he's a robot. Imagine you were a robot how would you feel. Hold a press conference with the class asking questions on your abilities and life.

6. **EXAMPLES OF CHANGE:**

There are alternative forms of energy sources. You are a salesperson for a windmill company, create an ad for your company.

7. **EXAMPLES OF HABIT:**

When electricity stops often our lives do too. Make a scrap book representing the things we use out of habit.

8. **ORGANIZED RANDOM SEARCH:**

We have done experiments using organic objects to produce electricity. Pretend you are stranded on an island, you make a shack but you want electricity. Use objects on the island to make electricity.

9. **SKILLS OF SEARCH:**
Pretend you are a mouse from Thomas Edison's house. Write a fairy tale about your adventures.
10. **TOLERANCE FOR AMBIGUITY:**
You are an electron. Create a maze you would use to meet a proton.
11. **INTUITIVE EXPRESSION:**
Natural resources are being used to provide electricity. Put on a puppet show from a natural resources point of view. Use all your senses.
12. **ADJUSTMENT TO DEVELOPMENT:**
Alexander Graham Bell created many versions of the telephone before finding success. Put together a photo essay of something that you have had to do over and over again, before having success.
13. **STUDY CREATIVE PEOPLE AND PROCESS:**
There are many famous people who have invented things with electricity. Make a sculpture of one of them.
14. **EVALUATE SITUATIONS:**
Computers have become a big part of our lives. Write a new law, governing the Internet usage in your home.
15. **CREATIVE READING SKILL:**
Your family just got a new DVD player. Read the instructions to figure out how to program it. Demonstrate the process in class.
16. **CREATIVE LISTENING SKILL:**
Write a picture story about electricity so a second grader can understand it. Present it to a second grade classroom.
17. **CREATIVE WRITING SKILL:**
Create a word association activity about electricity and come up with a rap song.
18. **VISUALIZATION SKILL:**
Make a video of their expression (feelings, thoughts, and ideas) towards electricity.

CRITICAL THINKING SKILLS – ACADEMIC ANALYZING HUMAN ACTIVITIES! (AHA!)

STATE STANDARD #_____ STUDENTS WILL BE ABLE TO Identify What Produces Electricity

ESSENTIAL QUESTION: How does the Universal Theme of **Producing, Exchanging and Distributing** create mastery learning of essential concepts in this unit?

1. **PRODUCING, EXCHANGING, AND DISTRIBUTING** [ECONOMICS] (Textbook or Database_
Scott Foresman Module A & E)

KNOWLEDGE:

Anticipatory Set: Movie Clip "Frankenstein" (Black & White original clip 1933) where Frankenstein is being "charged."

Students will: Identify what produces electricity. Read pg 5-11 module E.

COMPREHENSION:

Restate in 25 words the process on how electricity is produced.

APPLICATION:

Anticipatory Set: Balloons at each table, view a film clip from Bill Nye “Electricity”, the scene with the balloons

Students will: Review pages 5-7.

Class/team product: Sketch a picture or role-play of what happened with the balloons.

Multicultural and/or ESL and/or Bilingual Link: Ojibwe words for electricity.

Mathematics/Science Link and/or Humanities Link: Students will time how long balloon sticks to their shirt and then find the average time of their groups.

School-to-Career/Tech Prep Link: In computer lab, look up careers that deal with electricity on the Internet.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory Set: Read the poem “Plugging In” By Shel Silverstein

Students will: Brainstorm words that remind them of electricity.

Class/team/individual product: Write a poem/story/poster about electricity.

INDIVIDUAL JOURNAL ASSIGNMENT: List 10 ways you use electricity at home.

HOMELINK: Discuss with an adult at home, ways to use electricity at home.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO _____ Identify what a circuit, insulator, and conductor.

ESSENTIAL QUESTION: How does the Universal Theme of **Transportation** create mastery learning of essential concepts in this unit?

2. **TRANSPORTATION** (Textbook or Database Scott Foresman Module A & E)

KNOWLEDGE:

Anticipatory Set: Show film clip from “Terminator 2” (scene when he comes back to life), show model electrical tester (pg. E 12)

Students will: Be able to distinguish the difference between an insulator vs. a conductor for electrical currents.

COMPREHENSION:

Students will list, with their teams, two materials that let electricity flow through them and two that stop it.

APPLICATION:

Anticipatory Set: Listen to song “Electric Avenue”

Students will: Be able to draw and label an electrical circuit, showing the path of electricity.

Class/team product will build a model to explore conductors vs. insulating materials (activity on pg. 12, module E)

Multicultural and/or ESL and/or Bilingual Link: Tie in the Ojibwe cultural belief about the Medicine Wheel.

Mathematics/Science Link and/or Humanities Link: Create a Medicine Wheel art project. (Either in the classroom or with the art teacher)

School-to-Career/Tech Prep Link: Have computer technician come to classroom to make a presentation about computer circuitry.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Have assorted materials to make circuits set out on tables.

Students will: Test different materials to see if they conduct or insulate circuits.

Class/team/individual product: Generate a working circuit using the materials supplied to be able to describe the flow of electricity.

INDIVIDUAL JOURNAL ASSIGNMENT: Write a summary and diagram of the circuit they built, including an example of a conductor and insulator.

HOMELINK: Ask a grown-up to show them where the circuit/fuse box is. See pg. E 17.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO identify the difference between AC/DC

ESSENTIAL QUESTION: How does the Universal Theme of **Communications** create mastery learning of essential concepts in this unit?

3. **COMMUNICATIONS** (Textbook or Database _____ website, www.satcure-focus.com _____)

KNOWLEDGE:

Anticipatory Set: Listen to song “Thunderstruck” by AC/DC.

Students will: Show an understanding of AC vs. DC. For example, they will generate a class list of objects that uses AC and objects that use DC.

COMPREHENSION:

Class will construct a Venn diagram comparing AC vs. DC.

APPLICATION:

Anticipatory Set: Watch Bill Nye video clip on electricity, AC/DC section.

Students will: Demonstrate the difference between AC/DC.

Class/team product: Teams will produce a skit showing an understanding of AC and DC.

Multicultural and/or ESL and/or Bilingual Link: Discussion of Ojibwe life before power.

Mathematics/Science Link and/or Humanities Link: Present a skit to another class, or an averaging lesson using AC/DC objects around the classroom, school building, homes, etc.

School-to-Career/Tech Prep Link: Create an ad for a battery.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Black room, (no power), use of a flashlight, and go half-hour without power.

Students will: Create a collage on what is more important AC or DC. You need to choose one, either AC or DC and defend why you choose that one.

Class/team/individual product: Discuss with your team why you choose what you did.

INDIVIDUAL JOURNAL ASSIGNMENT: What do you use more of AC products or DC products? Explain.

HOMELINK: List 5 examples of AC and DC products around your home.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO _____ learn about protecting and conserving our natural resources.

ESSENTIAL QUESTION: How does the Universal Theme of **Protecting and Conserving** create mastery learning of essential concepts in this unit?

4. **PROTECTING AND CONSERVING** (Textbook or Database Houghton Mifflin Social Studies Text)

KNOWLEDGE:

Anticipatory Set: Read “Wump World” by Bill Peet.

Students will: Read pg. 16-18 in social studies book on natural resources.

COMPREHENSION:

Create chart using nonrenewable and renewable sources of energy.

APPLICATION:

Anticipatory Set: Watch “Independence Day” film clip, scene where the alien is talking through the doctor.

Students will: predict/brainstorm what could happen if sources were used up

Class/team product: Students will draw a picture of what it would look like if all resources were used up.

Multicultural and/or ESL and/or Bilingual Link: Chief Seattle poem “Mother Earth”, flute music in the background.

Mathematics/Science Link and/or Humanities Link: Learn actions to “Mother Earth” poem, with music.

School-to-Career/Tech Prep Link: Presentation from someone at the DNR or Power Plant.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Uncooked pizza vs. cooked pizza

Students will: show understanding on how we need to protect or conserve energy by writing a persuasive letter.

Class/team/individual product: Students will write a persuasive letter to their parent or guardian dealing with protecting or conserving electricity.

INDIVIDUAL JOURNAL ASSIGNMENT: Draw a comic strip, showing your superhero character protecting our energy or fighting wasteful machines.

HOMELINK: Find out ways they can conserve energy at home.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO _____ provide education by the using a timeline of electricity.

ESSENTIAL QUESTION: How does the Universal Theme of **Providing Education** create mastery learning of essential concepts in this unit?

5. **PROVIDING EDUCATION** (Textbook or Database website, www.fargo.itp.tsoq.nyu.edu)

KNOWLEDGE:

Anticipatory Set: Watch “Ben and Me” film clip, where Franklin is trying to harness electricity.

Students will: Discuss the time in history when Franklin was alive. For Example: Describe a day’s use of electricity.

COMPREHENSION:

Understand the process of how electricity was developed through time. Many people contributed to its development.

APPLICATION:

Anticipatory Set: Read selected sections of “Benjamin Franklin.”

Students will: Research in computer lab a specific person from timeline. Give 3-5 minute oral presentation

Class/team product: Students will create a timeline from history of electricity on the blackboard or butcher paper.

Multicultural and/or ESL and/or Bilingual Link: Students will create a timeline of the history of Red Lake.

Mathematics/Science Link and/or Humanities Link: Students will compare AD vs. BC on timeline.

School-to-Career/Tech Prep Link: Presentation from a Professor of Science/Physics.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Read the story “The Story of Lightning & Thunder” by Ashley Bryan.

Students will: write an incredible people report, or fairy tale from the point of view of their chosen person from the timeline.

Class/team/individual product: develop their individual character, for example: make a character portrait, do a more in-depth research report.

INDIVIDUAL JOURNAL ASSIGNMENT: Compare your presentation to another person from the classroom.

HOMELINK: Talk to an older person (neighbor, Grandparent, etc.) about what life was like when they were young concerning electricity.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO compare and contrast tools vs. tools using electricity.

ESSENTIAL QUESTION: How does the Universal Theme of **Making and Using Tools and/or Technology** create mastery learning of essential concepts in this unit?

6. **MAKING AND USING TOOLS AND/OR TECHNOLOGY**

KNOWLEDGE:

Anticipatory Set: Hands on materials (ex. Pencil sharpener, can opener, hand mixer, etc.)

Students will: Brainstorm other materials that use electricity that makes life easier. List advantages of electric tools and how life has improved with their invention.

COMPREHENSION:

Compare and contrast tools of the past with tools of the present. For example, create a Venn diagram.

APPLICATION:

Anticipatory Set: Watch movie clip “You’ve Got Mail” with Tom Hanks and Meg Ryan, any scene where they are “chatting” on the Internet.

Students will: discover how the Internet has made research quicker vs. going to the library and looking for it individually.

Class/team product: Students will collect data about computers in the home and make a graph showing data.

Multicultural and/or ESL and/or Bilingual Link: Look at the different tools that the Native Americans used before electricity was invented.

Mathematics/Science Link and/or Humanities Link: Problem-solving questions from Addison-Wesley Problem Solving that deals with technology.

School-to-Career/Tech Prep Link: Have Librarian give a demonstration of the Dewey decimal system.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Watch film clip from “Back to the Future”, scene where Michael J. Fox is in the professors house looking at all his inventions.

Class/team/individual product: Either design a new tool using electricity or improve on a tool that already uses electricity.

INDIVIDUAL JOURNAL ASSIGNMENT: Explain how to use your new or improved tool.

HOMELINK: Talk with someone at home and try to come up with another improvement for your tool.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO explain how to use electricity during recreation activities.

ESSENTIAL QUESTION: How does the Universal Theme of **Providing Recreation** create mastery learning of essential concepts in this unit?

7. **PROVIDING RECREATION**

KNOWLEDGE:

Anticipatory Set: Watch “Blank Check” video clip, scene where he’s playing Nintendo on a big screen TV.

Students will: List all the fun things you do that needs electricity.

COMPREHENSION:

Students will give examples of how electricity provides recreation. For example create a mobile.

APPLICATION:

Anticipatory Set: Have stations set up in classroom with non-electric games.

Students will: Brainstorm words that deal with games that use electricity.

Class/Team product: Prepare a crossword puzzle or word find using the words that were brainstormed previously.

Multicultural and/or ESL and/or Bilingual Link: Learn and play games from the Native American culture.

Mathematics/Science Link and/or Humanities Link: Calculate number of hour’s students play Nintendo per week vs. number of hours they read per week. Find the average and the difference.

School-to-Career/Tech Prep Link: Have a presentation from either of the local colleges, or a computer store, come and show how computer programs are made.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Watch video clip from movie “Encino Man”, scene where he first gets out of the ice block.

Students will: interpret how electricity has provided recreation.

Class/team/individual product: Students will come up with a list of different ways in which electricity was new for the cave man in the video clip.

INDIVIDUAL JOURNAL ASSIGNMENT: What would you do if you had to go a week without power? What would you miss the most?

HOMELINK: Talk with someone at home what types of materials that you would need to survive for a week without electricity.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO understand the way electricity is organized.

ESSENTIAL QUESTION: How does the Universal Theme of **Organizing and Governing** create mastery learning of essential concepts in this unit?

8. **ORGANIZING AND GOVERNING** (Textbook or Database Information binder from power plant)

KNOWLEDGE:

Anticipatory Set: Watch Bill Nye video clip on power plants.

Students will: have an understanding of how a power plant works.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Field trip to local power plant

Students will: Organize information collected at power plant they receive.

Class/team/individual product: Students will plan and construct a pamphlet of information to share with their family.

INDIVIDUAL JOURNAL ASSIGNMENT: Thank you letter to power plant.

HOMELINK: Ask an adult where the local or closest power plant/company is at.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO understand the usage of electricity in a moral/ethical/and spiritual behavior.

ESSENTIAL QUESTION: How does the Universal Theme of **Moral, Ethical and Spiritual Behavior** create mastery learning of essential concepts in this unit?

9. **MORAL, ETHICAL AND SPIRITUAL BEHAVIOR**

KNOWLEDGE:

Anticipatory Set: Watch clip from “Terminator 2” where there is the nuclear explosion, discuss ethical and unethical aspects of the clip.

Students will: Identify 4 major ethical issues in using electrical power.

COMPREHENSION:

Using info from knowledge create a graphic organizer sharing ethical uses and unethical uses of electricity. For example: nuclear power plants, hydroelectric and windmills, and waste.

APPLICATION:

Anticipatory Set: X-rays, watch film clip of “Days of Thunder”, scene where Tom Cruise is getting a MRI.

Students will: Research people who used electrical and for evil for a word search.

Class/team product: Create a word search puzzle of 6 great people that used electricity for good and 6 people that use it for evil.

Multicultural and/or ESL and/or Bilingual Link: Discuss the masks used for the Mexican holiday Day of the Dead.

Mathematics/Science Link and/or Humanities Link: Discuss terminology of gamma rays, amps/ohms, and other ways of measuring electrical power.

School-to-Career/Tech Prep Link: Have either an X-Ray technician or Dentist Hygienist talk to the class.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Read short story “I, Robot” By Isaac Asimov

Students will: Discuss the 3 rules that all robots must obey.

Class/team/individual product: Write a proclamation for the future use of electrical energy only for positive uses.

INDIVIDUAL JOURNAL ASSIGNMENT: Write about a time you got in trouble for using too much energy.

HOMELINK: Ask your family if they believe Minnesota should harness the power of wind to harness electricity using windmills even if the windmills are ugly.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO how to use aesthetic needs using electricity.

ESSENTIAL QUESTION: How does the Universal Theme of Aesthetic Needs create mastery learning of essential concepts in this unit?

10. **AESTHETIC NEEDS** (Textbook or Database_____6+1 Traits Writing Program_____)

KNOWLEDGE:

Anticipatory Set: Show film clip from a Disney cartoon on how lighting affects the mood. For example: scary/happy.

Students will: Identify the use of lighting to create an atmosphere. For example, students will generate a list of places lighting is used for a special purpose.

COMPREHENSION:

Generalize how lighting affects moods for example, x-mas lights, spot lights, etc. Also distinguish the difference when lighting is used in nature and cities.

APPLICATION:

Anticipatory Set: Read story “All The Places To Love” By Patricia MacLachlan

Students will: Brainstorm a list of important personal places.

Class/team product: Create a class book, of ways they think life is made more beautiful or enhanced by electricity.

Multicultural and/or ESL and/or Bilingual Link: Discuss how lighting helps casinos.

Mathematics/Science Link and/or Humanities Link: Compare the wattage of a neon light and the wattage of regular light bulbs.

School-to-Career/Tech Prep Link: Have someone that makes neon signs come in and discuss how they are made.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Have curling iron, electric toothbrushes, blow dryer, curlers, lighted mirrors, and/or electric shaver set on table.

Students will: Find connections of items on table, to aesthetic needs of a person.

Class/team/individual product: Students will create a video clip showing the connections.

INDIVIDUAL JOURNAL ASSIGNMENT: Students will write a movie review of other group’s video clips.

HOMELINK: Do you use lights to enhance objects around your house? If so what and why?

STATE STANDARD #_____STUDENTS WILL BE ABLE TO_____ identify the differences using music and electricity.

ESSENTIAL QUESTION: How does the discipline/sub-discipline of music relate to mastery learning of electricity?

11. **Music**

KNOWLEDGE:

Anticipatory Set: Listen to the instrumental part of Eric Clapton’s song “After Midnight.”

Students will: describe the electronic impact on the development and change of musical instruments in computer lab, view a CD ROM.

COMPREHENSION:

Students will summarize and orally report the development of 2 musical instruments that were once acoustic and are now electric.

For example the guitar and piano

APPLICATION:

Anticipatory Set: Take class to music room and let them try electric and acoustic guitars. Let students try both electric and acoustic pianos.

Students will: Write a poem using only 2 syllable words about 1 of the instruments, describing its sounds and how electricity changed the sound.

Class/Team Product: Teams will then choose one poem and turn it in to a rap song, being allowed to change the poem as necessary, but keeping words to 2 syllables.

Multicultural and/or ESL and/or Bilingual Link: CD ROM on instruments of the Ojibwe peoples, find five instruments and write the English and Ojibwe words for them.

Mathematics/Science Link and/or Humanities Link: Create a chart of “home link” results

School-to-Career/Tech Prep Link: Invite a guitarist in to play for class. Invite music teacher to discuss other types of musical instruments with class.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Listen to a Jimmy Hendricks and a James Taylor song

Students will: Write 10-12 lines to a song that is to be played by a heavy metal band and 10-12 lines of a song that would be played by an acoustic band.

Class/team/individual product: Create a short skit about a hard rock band whose electric guitar and electric piano get stolen and replaced by acoustic and how their music changes. Sing the lyrics they have written during the skit.

INDIVIDUAL JOURNAL ASSIGNMENT: Students will write an opinion paper on which type of music they enjoy the most and why.

HOMELINK: Survey members of household as to their favorite types of music (rock, native, classical, pop, jazz/blues, heavy metal, rap, pop)

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO learn the properties or static electricity.

ESSENTIAL QUESTION: How does the discipline/sub-discipline of static electricity relate to mastery learning of electricity?

12. Static Electricity _____ (Textbook or Database Scott Foresman Module A)

KNOWLEDGE:

Anticipatory Set: Listen to Schoolhouse Rocks “Electricity” song.

Students will: discuss/brainstorm with a partner or team why and how people can use static electricity.

COMPREHENSION:

Summarize the main ideas of chapter one.

APPLICATION:

Anticipatory Set: Drag feet across room and shock someone. Read a funny poem about shocking something.

Students will: Role-play what students think happens when you get a shock and do activity 151: How can you make a spark with your finger? (pg. 223 Physical Science Activities for Grades 2-8)

Class/team product: Design a bumper sticker.

Multicultural and/or ESL and/or Bilingual Link: Make a word find using Ojibwe words about static electricity.

Mathematics/Science Link and/or Humanities Link: Make a graph of places where people got shocked ex. arm, face, hand, etc.

School-to-Career/Tech Prep Link: Have a meteorologist come in and discuss the difference in weather static.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Video clip from “Back to the Future” when the car goes back in time using a bolt of electricity.

Students will: Write a newspaper article about static electricity.

Class/team/individual product: Help revise teams article and then make a classroom newspaper.

INDIVIDUAL JOURNAL ASSIGNMENT: What was your favorite part of the activity?

HOMELINK: Show the activity of how to make a spark to someone at home and explain the process.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO see how math formulas are used with electricity.

ESSENTIAL QUESTION: How does the discipline/sub-discipline of Math relate to mastery learning of electricity?

13. Math

KNOWLEDGE:

Anticipatory Set: Electric Bill, Overhead

Students will: Will distinguish relevant from irrelevant information, they will determine what steps are used to calculate the bill.

COMPREHENSION:

Students will explain how the electric company calculated the Electric bill.

APPLICATION:

Anticipatory Set: Meter reading for the next billing, and a calculator

Students will: Calculate how much the next month’s bill will be.

Class/team product: Students will compare the calculations.

Multicultural and/or ESL and/or Bilingual Link: Interview an elder about when electricity was introduced into their homes. What was their reaction and how do they feel about it now?

Mathematics/Science Link and/or Humanities Link: Students will make a poster concerning ways they save on their electric bill.

School-to-Career/Tech Prep Link: Power company representative coming to explain how each item is calculated.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Read book “Antler, Bear, Canoe; A Northwood’s Alphabet Year” By Betsy Bowen.

Students will: Distinguish between the seasons and the cost of electric bills. Explaining why one season’s bill might be higher than another and comparing on region of USA to another. Create a collage of the four seasons showing their understanding in electric costs and seasons.

Class/team/individual product: Students will present their collage to class and hang in hallway.

INDIVIDUAL JOURNAL ASSIGNMENT: What time of the year would you think your electric bill will be more and why?

HOMELINK: Show someone at home that they know how to calculate what the electric bill will be for the next month.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO see how economics is used along with electricity.

ESSENTIAL QUESTION: How does the discipline/sub-discipline of economics relate to mastery learning of electricity?

14. Economics (Textbook or Database Houghton-Mifflin Social Studies)

KNOWLEDGE:

Anticipatory Set: Paper money and sample electricity bills

Students will: Have an understanding about the cost of electricity to the household.

COMPREHENSION:

Students will generate their own electricity bill and estimate and find actual bill amount. (save for application)

APPLICATION:

Anticipatory Set: Show student's different types of completed graphs.

Students will: Discuss what type of graph might work best, and what graphs might not work.
Class/team product: Students will create their own graph.

Multicultural and/or ESL and/or Bilingual Link: Compare costs of electricity at Red Lake compared to a different Reservations or different Countries.

Mathematics/Science Link and/or Humanities Link: Design a picture of your house using electricity.

School-to-Career/Tech Prep Link: Students will research a career that involves the electrical company.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Student generated electric bills on desk

Students will: plot data on chart; find mean, median, and mode.

Class/team/individual product: Teams will create a graph of their choice on data.

INDIVIDUAL JOURNAL ASSIGNMENT: Students will write a report on the importance of electricity and conserving electricity.

HOMELINK: Have students interview parent about the cost of electricity and how to lower their bill.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO understand the nervous system more complete.

ESSENTIAL QUESTION: How does the discipline/sub-discipline of nervous system relate to mastery learning of electricity?

15. Nervous System (Textbook or Database Scott Foresman Module E, website
www.facualty.washington.edu (Neuroscience for Kids))

KNOWLEDGE:

Anticipatory Set: Open container of fragrant herbs (set up around the room) or show them a picture of a brain and light bulb, how are these alike?

Students will: Make a list of ways they become aware of what is around them, read textbook pages E31-33, and review model of nerve cell.

COMPREHENSION:

Students summarize reading assignment, using one to two sentences to paraphrase the nerve network, (jigsaw activity), signals in the body, and nervous system.

APPLICATION:

Anticipatory Set: Play a brain song (<http://facualty.washington.edu/>)

Students will: Play synaptic tag.

Class/team product: Create a model of a neuron or the nerve network.

Multicultural and/or ESL and/or Bilingual Link: Learn Ojibwe words related to the brain and its functions.

Mathematics/Science Link and/or Humanities Link: Play Memory and learning game-Be a detective.

School-to-Career/Tech Prep Link: Have a doctor come in and discuss the nervous system.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Show movie clip from “A.I.” Also show them the pictures of the light bulb and the brain.

Students will: Explain the similarity of electricity and the nervous system, how are they alike?

Class/team/individual product: Draw a map of electrical current and nerve current, show the similarities.

INDIVIDUAL JOURNAL ASSIGNMENT: The phrase “A light came on” or “ The light bulb just turned on” is often used, what do you think it means?

HOMELINK: Send home brainteasers and make it a family fun activity.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO see how you use electricity in physical education.

ESSENTIAL QUESTION: How does the discipline/sub-discipline of physical education relate to mastery learning of electricity?

16. Physical Education

KNOWLEDGE:

Anticipatory Set: Treadmills, various speeds of the treadmill

Students will: learn how friction is used to pedal the wheels of the treadmill.

COMPREHENSION:

Identify simple machines, follow the path by which force travels through the machine.

APPLICATION:

Anticipatory Set: Watch a video clip on exercise.

Students will: Compare and contrast the difference between using an electric treadmill, and a manual treadmill.

Class team product: Brainstorm with team members on all the ideas and come up with a complete list. Make a collage or mobile of the different ideas.

Multicultural and/or ESL and/or Bilingual Link: Bicycles vs. olden days (i.e. walking, horses, etc.)

Mathematics/Science Link and/or Humanities Link: Students will take pulse rates after riding on treadmill for different increments of time.

School-to-Career/Tech Prep Link: Have a Physical Ed. Teacher come in and talk to students about treadmills/bicycles.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Wheels on a bicycle

Students will: Understand how electricity makes things run smoother.

Class/team/individual product: Students will design an electric bicycle.

INDIVIDUAL JOURNAL ASSIGNMENT: Would you rather exercise with electricity or without the help of it? Why?

HOMELINK: Discuss the different types of exercise equipment that uses electricity, try and come up with a few new ideas.

STATE STANDARD # _____ STUDENTS WILL BE ABLE TO reproduce electron structure.

ESSENTIAL QUESTION: How does the discipline/sub-discipline of atom and electron structure relate to mastery learning of electricity?

17. **Atom and Electron Structure** (Textbook or Database Scott Foresman Module A)

KNOWLEDGE:

Anticipatory Set: Look through microscopes to see smaller units of objects called cells.

Students will: Cut pictures out of magazines, then cut out smaller parts within it which make the picture hard to identify. Share with others in your group.

COMPREHENSION:

Distinguish the difference of electrons and protons. For example, students will explain how electrons jump from one object to another because of the larger number of protons.

APPLICATION:

Anticipatory Set: Put a ball in one box, 2 nails in another, and a block in a 3rd. Students will try to identify what is inside without looking.

Students will: Identify the parts of atoms, specifically electrons, protons, and neutrons

Class/team product: Create a diagram of an atom within their groups.

Multicultural and/or ESL and/or Bilingual Link: Learn the Ojibwe words for atoms, electrons, and neutrons.

Mathematics/Science Link and/or Humanities Link: Make a map of locations of nuclear power plants.

School-to-Career/Tech Prep Link: Research an atomic scientist, and write about their educational background.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Rub balloons and see how many you can charge and stick to yourself.

Students will: Show what they have learned about atomic structure by building a model

Class/team/individual product: Build a model of a simple electron using Styrofoam balls and assorted length straws to show electrons, protons, and neutrons.

INDIVIDUAL JOURNAL ASSIGNMENT: Write about how an electric charge flows from one atom to another.

HOMELINK: Bring home your model and explain to an adult the process of the electric charge from one atom to another.

**MORAL / ETHICAL / SPIRITUAL
REASONING AND DILEMMAS
FOR CHARACTER EDUCATION**

TEN ETHICAL DILEMMAS

STATE STANDARD # _____.

ESSENTIAL QUESTION: How does the content of this unit reflect **character education** through Moral and Ethical dilemmas?

1. **Producing, Exchanging, and Distributing** [Economics]

ESSENTIAL QUESTION: How does the **Human Activity** of **Producing, Exchanging and Distributing** create moral/ethical dilemmas?

DILEMMA: Someone has had the same class 2 years before. They are willing to give you their poem on electricity. What will you do? Will you take it and use it for your own? Or will you write your own poem?

2. **Transportation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Transportation** create moral/ethical dilemmas?

DILEMMA: New research shows that stronger, more efficient circuits can be made by using the intestines of puppies. Would you use the intestines for cheaper, better electricity? Or would you continue using the current type of electricity and save the puppies?

3. **Communications**

ESSENTIAL QUESTION: How does the **Human Activity** of **Communications** create moral/ethical dilemmas?

DILEMMA: People want to switch back to all DC because it is cheaper and easier to use. However, it would lead to more pollution. Should we switch back to all DC or stay using AC and DC both?

4. **Protecting and Conserving**

ESSENTIAL QUESTION: How does the **Human Activity** of **Protecting and Conserving** create moral/ethical dilemmas?

DILEMMA: The time setting is the 1950's.... The county is planning on building a new power plant on the shores of Red Lake. The power plant would create many new jobs and a richer city. However, it could possibly pollute the water, kill the fish, and leave the community with no drinking water. Do you still vote for the addition of the power plant to the city?

5. **Providing Education**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Education** create moral/ethical dilemmas?

DILEMMA: You have the chance to go back in time and change one of your mistakes. However, it could alter some part of your life today - either in a positive or negative way. Would you go back and change your mistake or leave your life the way it is?

6. **Making and Using Tools and/or Technology**

ESSENTIAL QUESTION: How does the **Human Activity** of **Making and Using Tools and/or Technology** create moral/ethical dilemmas?

DILEMMA: You are the owner of a car factory. You have the chance to computerize your assembly line and make your factory more efficient - consequently making you more money. However, computerizing your assembly line will force you to fire the people who currently work on them. Do you fire all these people and go with the computers? Or, do you help the people to keep their jobs?

7. **Providing Recreation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Recreation** create moral/ethical dilemmas?

DILEMMA: You could make millions of dollars by selling a video game that you have invented. However, kids who play it would be at an increased risk for cancer. Do you go ahead and o.k. the production of the new game? Or, knowing the risks, do you decide not to sell the game?

8. **Organizing and Governing**

ESSENTIAL QUESTION: How does the **Human Activity** of **Organizing and Governing** create moral/ethical dilemmas?

DILEMMA: Because of the depletion of natural resources, the price of electricity has recently skyrocketed. A friend of yours knows of a way that you can still get power but from a different, secret

source therefore avoiding paying the power company. Do you use the power as it is currently supplied or do you take advantage of the “secret” source of power?

9. Moral, Ethical and Spiritual Behavior

ESSENTIAL QUESTION: How does the **Human Activity** of Moral, Ethical and Spiritual Behavior create moral/ethical dilemmas?

DILEMMA: A family member is severely injured in an accident. Their only chance of survival is to replace their brain with a computer. Would you rather let them die or have them live the remainder of their lives as a robot?

10. Aesthetic Needs

ESSENTIAL QUESTION: How does the **Human Activity** of Aesthetic Needs create moral/ethical dilemmas?

DILEMMA: You are the owner of a casino. You have the chance to put up many more lights on the outside of your building. You know that the lights would attract more people to your casino therefore, making you more money. However, you also know that using these lights would drive up the price of electricity for the people living near the casino. The additional lights could also lead to power outages. Do you put the new lights up or leave your casino lights the way they are?

PRODUCTIVE THINKING SKILLS DIVERGENT / CREATIVE THINKING

1. **BRAINSTORM MODEL**

A. BRAINSTORM ALL OF THE _____.

AHA #1. Ways electricity is produced

AHA #2. Ways electricity travels

AHA #3. Ways the appliances in your house that uses D.C

AHA #4. Ways you can conserve energy

AHA #5. Ways tried to harness energy

AHA #6. Tools that use electricity

AHA #7. Ways electricity provides recreation

B. BRAINSTORM AS MANY _____ AS YOU CAN THINK OF.

AHA #8. Power companies

AHA #9. Ethical issues

AHA #10. Ways electricity shows beauty

AHA #11. Songs about electricity

AHA #12. Things you can get shocked from

AHA #13. Ways numbers are used in electricity

AHA #14. Ways you can get paid from electricity

C. HOW MANY WAYS CAN YOU COME UP WITH TO _____?

AHA #15. Describe bread (senses)

AHA #16. Use electricity in physical education.

AHA #17. Attract and repel objects

2. **VIEWPOINT MODEL (Human or Animate) (Use Cultural Literacy Terms)**

A. HOW WOULD _____ LOOK TO A(N) _____?

AHA #1. Light bulb

eel

AHA #2. Electrical tester

Ben Franklin

AHA #3. Cell phone

Alexander Graham Bell

AHA #4. Red Lake today

Our Ancestors

AHA #5. Computer

A Pilgrim

AHA #6.	<u>Electric toothbrushes</u>	<u>Abraham Lincoln</u>
AHA #7.	<u>Video game</u>	<u>Great Great Grandma</u>
AHA #8.	<u>Plug in</u>	<u>Lewis & Clark</u>

B. WHAT WOULD A _____ MEAN FROM THE VIEWPOINT OF A(N) _____?

AHA #10.	<u>Las Vegas</u>	<u>Indian Warrior Chief Seattle</u>
AHA #11.	<u>Electric guitar</u>	<u>Greek Goddess</u>
AHA #12.	<u>Plasma Flasher</u>	<u>Thomas Edison</u>
AHA #13.	<u>Electric bill</u>	<u>First grades</u>
AHA #14.	<u>Electric bill</u>	<u>Our Ancestors</u>
AHA #15.	<u>Electric shock</u>	<u>Eel</u>
AHA #16.	<u>Treadmill</u>	<u>Peddler</u>
AHA #17.	<u>Human cell</u>	<u>Alien</u>

C. HOW WOULD _____ VIEW THIS?

(Use one person from history here)

1.	<u>Benjamin Franklin</u>
2.	<u>Alexander Graham Bell</u>
3.	<u>William Gilbert</u>
4.	<u>Humphrey Davy</u>
5.	<u>Samuel F. B. Morse</u>
6.	<u>Heinrich Rudolph Hertz</u>

3. INVOLVEMENT MODEL (Personification / Inanimate object brought to life)

A. HOW WOULD YOU FEEL IF YOU WERE _____?

AHA #1.	<u>Electricity</u>
AHA #2.	<u>The switch in the circuit</u>
AHA #3.	<u>Battery in cell phone</u>
AHA #4.	<u>The bricks in Hoover Dam</u>
AHA #5.	<u>Key on Ben Franklin's kite</u>
AHA #6.	<u>Jack Hammer, any tool</u>
AHA #7.	<u>The Nintendo controller</u>

B. IF YOU WERE A _____, WHAT WOULD YOU (SEE, TASTE, SMELL, FEEL, etc.)?

AHA #8.	<u>Power plant</u>
AHA #9.	<u>Nuclear bomb</u>
AHA #10.	<u>Neon light</u>
AHA #11.	<u>Electric guitar</u>
AHA #12.	<u>Static electricity</u>
AHA #13.	<u>Math mistake</u>
AHA #14.	<u>Outrageous electric bill</u>

C. YOU ARE A _____. DESCRIBE HOW IT FEELS.

AHA #15.	<u>Dendrite</u>
AHA #16.	<u>Treadmill</u>
AHA #17.	<u>Electron</u>

4. CONSCIOUS SELF-DECEIT MODEL

A. SUPPOSE _____. WHAT _____.

AHA #1.	<u>Electricity</u>	<u>would our country be like</u>
AHA #2.	<u>Travel at the speed of sound</u>	<u>would it be like</u>
AHA #3.	<u>There wasn't any batteries</u>	<u>would you do</u>
AHA #4.	<u>All resources were used up</u>	<u>would life be like</u>
AHA #5.	<u>Thomas Edison wasn't born</u>	<u>would you use for light</u>

AHA #6. <u>There wasn't headlights</u>	<u>would you use to guide you at night</u>
AHA #7. <u>There were no video games</u>	<u>would you do instead</u>
AHA #8. <u>There were no elec. companies</u>	<u>would you do to get electricity</u>
AHA #9. <u>Your belief didn't allow the use of electricity</u>	<u>would life be like</u>

B. YOU CAN _____ . WHAT _____ ?

AHA #10. <u>Create emotion with light</u>	<u>would that be like</u>
AHA #11. <u>Write a song about electricity</u>	<u>would its title be</u>
AHA #12. <u>Gives shocks all the time</u>	<u>would your friends say</u>
AHA #13. <u>Calc. # at speed of light</u>	<u>speed would it be</u>
AHA #14. <u>Turn off any ones power</u>	<u>would you do</u>
AHA #15. <u>Speed up your reflexes</u>	<u>would it feel like</u>
AHA #16. <u>increase your senses</u>	<u>would you smell</u>
AHA #17. <u>be an electron</u>	<u>would it be like</u>

5. **FORCED ASSOCIATION MODEL (Use cultural literacy terms here)**

A. HOW IS _____ LIKE _____ ?

AHA #1. <u>Frankenstein</u>	<u>a light bulb</u>
AHA #2. <u>Path of electricity</u>	<u>a nervous system</u>
AHA #3. <u>A potato</u>	<u>a battery</u>
AHA #4. <u>A beaver</u>	<u>a chainsaw</u>
AHA #5. <u>A library</u>	<u>a computer</u>
AHA #6. <u>Book</u>	<u>Internet</u>
AHA #7. <u>Buggy</u>	<u>electronic game</u>

B. GET IDEAS FROM _____ TO IMPROVE _____ .

AHA #8. <u>Power plant</u>	<u>conservation of electricity</u>
AHA #9. <u>Amish</u>	<u>your neighborhood</u>
AHA #10. <u>The moon light</u>	<u>nightlight</u>
AHA #11. <u>Beethoven, Mother Goose</u>	<u>rap songs</u>
AHA #12. <u>Frankenstein</u>	<u>static electricity</u>
AHA #13. <u>Newspaper</u>	<u>graphs</u>
AHA #14. <u>Electric Company</u>	<u>consumption</u>

C. I ONLY KNOW ABOUT _____. EXPLAIN _____ TO ME.

AHA #15. <u>Hearing</u>	<u>sight</u>
AHA #16. <u>Sweat</u>	<u>why it happens</u>
AHA #17. <u>The words</u>	<u>the process</u>

6. **REORGANIZATION / SYNECTICS MODEL**

A. WHAT WOULD HAPPEN IF _____ ?

AHA #1. <u>All the molecules went on strike</u>
AHA #2. <u>Rubber let electricity flow through</u>
AHA #3. <u>We could only plug things in</u>
AHA #4. <u>There was no water</u>
AHA #5. <u>Thomas Edison would have been imprisoned for creating the light bulb</u>
AHA #6. <u>The Internet was not invented</u>
AHA #7. <u>You were given a blank check</u>

B. SUPPOSE _____ (HAPPENED)
WHAT WOULD BE THE CONSEQUENCES?

AHA #8. <u>There was a nuclear explosion</u>
AHA #9. <u>Cell phones caused cancer</u>
AHA #10. <u>The world was full of neon lights</u>

- AHA #11. _____ There was no music _____
- AHA #12. _____ You get a shock from everything you touched _____
- AHA #13. _____ There were no calculators or anything electronic with numbers _____
- AHA #14. _____ The more electricity you use the less your bill was _____

C. WHAT WOULD HAPPEN IF THERE WERE NO _____ ?

- AHA #15. _____ Brain _____
- AHA #16. _____ Physical. Ed Teachers _____
- AHA #17. _____ Microscopes _____

CULTURAL LITERACY

1. **Dates:**

400 B.C – Socrates to a torpedo fish
 1600 – Earth is a big magnet
 1650 – Electric machines
 1747- Famous kite experiment
 1827 – Ohm’s law
 1840 – Telegraph invented
 1843 – Electricity measured nerve impulses
 1864 – Proof of electromagnetism
 1875 – Phone invented
 1879 – Light bulb
 1887 – Transmission of electricity by electromagnetic waves

2. **Names:**

Back to the Future (title)	Power plant
Terminator (title)	Circuit
Ben Franklin (book title)	Insulator
Scott Foresman Science Book (title)	Conductor
Frankenstein (title)	Static Electricity
Transportation	Thunderstruck (title)
Producing	Communications
AC vs. DC	Venn diagram
Batteries	Houghton Mifflin Social Studies Text
Nonrenewable sources	Renewable resources
Electricity	Computer lab/technology
Collecting data for graphs	Electricity bills
Problem solving	Recreation
Field Trip	Bill Nye (video clips)
Songs	Write a movie review
Learn Ojibwe words for Electricity	Economics of electricity

3. **Proper Names:**

Thomas Edison	Otto VonGuericke
Samuel Morse	Heinrich Rudolph Hertz
Emil DuBois Reymond	George Ohm
James Maxwell	Benjamin Franklin
William Gilbert	Chief Seattle
Plato	Bill Nye
Alexander Graham Bell	

4. **Ideas:**

Amps	Circuit
------	---------

Shock
Volts
Kilowatts
Electricity
Static Electricity
Lightening
Insulator

Fuse box
Electrons
Voltage
Current
Conductor
Terminal
Atoms

5. Phrases

What is Electricity?
If I had a million dollars

Weird Science
How is electricity produced?

RESOURCES

I. BIBLIOGRAPHY – Teacher / Professional Books and Resources

“Vocabulary Cartoons” Burchers, New Monic Books, Inc: 1997
“Build Our Nation” level 5, volume 1, Houghton-Mifflin, Boston: 1997
“What Your Fifth Grader Needs To Know”, Hirsch, E.D, Delta: 1993
“Physical Science Activities for Grades 2-8”, Morton, James O., Tolman, Marvin N., Parker Publishing Company Inc: 1986
“The Timetables of History”, Grun, Bernard, Simon and Schuster New York: 1975
“Discover the Wonder”, Foresman, Scott, Harper Collins Publishers: 1996
“Problem Solving Experiences in Mathematics”, Charles, Randall; Gallagher, Geneva; and Mason, Robert, Addison-Wesley Publishing Company

II. BIBLIOGRAPHY

McKee, Karen. “Science Fair Projects with Electricity & Electrons.” Sterling Publishing Company: 1996
Littler, Amery. “The Know How Book of Batteries & Magnets.” Scholastic Inc: 1999
Cole, Joanna. “The Magic School Bus” Vsborne Publishing Inc: 1975
Fritz, Jean. “What’s the Big Idea, Ben Franklin?” Putnam & Grosset: 1976
Kindersley, Dorling. “Energy & Industry.” Dorling Kindersley: 1994
Bender, Lionel. “Invention.” Alfred Knopf New York: 1991
Maine, Diana. “Science.” Alfred Knopf New York: 1993
Dann, Sarah. “The Science of Energy.” Gareth Stevens Publishing: 2000
Aust, Siegfried. “Light! A bright Idea.” Learner Publishing Company: 1995
World Book Encyclopedias
Koseiwniak, Bruce. “The Story of the Incredible Orchestra.” Knoff: 1980
Branfield-Graham, Joan. “Flicker Flash”
Peet, Bill. “Wump World”
Chief Seattle “Mother Earth”
Parin d’Aulaire, Ingri & Edgar. “Benjamin Franklin”
Bryan, Ashley. “The Story of Thunder and Lightning”
Asimov, Isaac. “I, Robot”
MacLachlan, Patricia. “All the Places to Love”
Bowen, Betsy. “Antler, Bear, Canoe; A North Woods Alphabet Year.”

III. Educational Films / Videos and Commercial Films / Videos

Video – **Bill Nye the Science Guy, “Atoms”**
Video - **Bill Nye the Science Guy, “Electrical Current”**
Video - **Bill Nye the Science Guy, “Static Electricity”**
Video – **“Benjamin Franklin, Scientist and Inventor”**
Video - **“Did You Ever Wonder? Where Does Electricity Come From?”**
Video - **“Frankenstein” 1933**
Video - **“Terminator 2”**

Video - “**Independence Day**”
 Video - “**Ben and Me**”
 Video - “**You’ve Got Mail**”
 Video – “**Back to the Future**”
 Video – “**Blank Check**”
 Video - “**Encino Man**”
 Video – **Bill Nye the Science Guy, “Power Plants”**
 Video – “**Days of Thunder**”
 Video - “**Fantasia**”
 Video – “**Monster’s Inc.**”
 Video - “**A.I**”
 Video – “**Thomas Edison and the Electric Light**”
 Video – “**Tae Bo**”
 Video – “**Science Rock**”
 Video – “**Weird Science**”

IV. **Literature / Language Arts** (on reserve in Media Center for interest reading)

Poetry

“The Atom”, Thomas Thornely
 “Nature, The Gentlest Mother”, Emily Dickinson
 “Sonnet to Science”, Edgar Allan Poe
 “Plugging In”, Shel Silverstein
 “Mother Earth”, Chief Seattle
 “The New Kid on the Block”, Jack Prelutsky
 “Where the Sidewalk Ends”, Shel Silverstein
 “Flicker Flash”, Joan Branfield

Music

“**Electric Avenue**”, Eddie Grant
 “**Thunderstruck**”, AC/DC

Flute Music

“**Electricity**”, School House Rock
 “**Mexican Hat Dance**”

“**After Midnight**”, Eric Clapton

Drum Music, Ojibwe People

Jimmy Hendricks array of songs

“**Brain Song**”, <http://faculty.washington.edu/chudler/experi.html>

“**Static Electricity**”, Suzee Science Singer

“**E-lec-tri-city**”, Tom Glazer & Dottie Evens

James Taylor array of songs

“**Money, Money, Money**”. Abba

“**If I had a Million Dollars**” Bare Naked Ladies

“**Weird Science**”, Oingo Boingo

“**Grease Lightning**”, Grease Soundtrack

“**Walk 500 Miles**”, Pretenders

“**Sun Song**”, www.entersci.com

“**Energy & Motion**”, Tom Glazer & Dottie Evens

“**Electricity**”, Owens Marsh

VI. **Resource People / Mentors**

Computer Lab Techs.

Elders of the Community of Red Lake

X-Ray Technician

Dental Hygienist

Local Meteorologist

Physical Education Teacher

DNR

Librarian

Northwest Tech - Computer Programmer

Neon Sign Maker

Local Doctor

Local Power Company Employee

VII. **Field Trips**

Minnesota Power Company, Coleraine, MN.

Bemidji Headwaters Science Center, Bemidji, MN.

VIII. **Other Material** (CD–ROM, Laser Disc, Internet sites, etc.)

www.satpower.com

www.lessonplanspage.com

www.proteacher.com

www.satcare-focus.com

www.eduhound.com

www.fargo.itp.tsoq.nyo.edu

www.oyate.com

www.unitedstreaming.com

www.songsforteaching.com

www.galaxynet/k12/electric

www.hyperhistory.com

<http://faculty.washington.edu/chudler/experi.html>

www.reelclassics.com/gallery/video.htm

www.mus.org/sln/toe/toe.html

www.tranquility.net/~scimusic

CD Rom “Music Through the Ages”

CD Rom “I Love Science”

CD Rom “Human Body”

www.poetry4kids.com

www.firstscience.com

www.gigglepoetry.com

www.dawd.com

www.brainpop.com

www.entersci.com

www.scientainment.com